Joint Logistics Technology Office


# *Transportation Security and The Information Infrastructure*

*Briefing to*

# *14th Annual NDIA Security Technology Symposium*

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# DARPA Mission

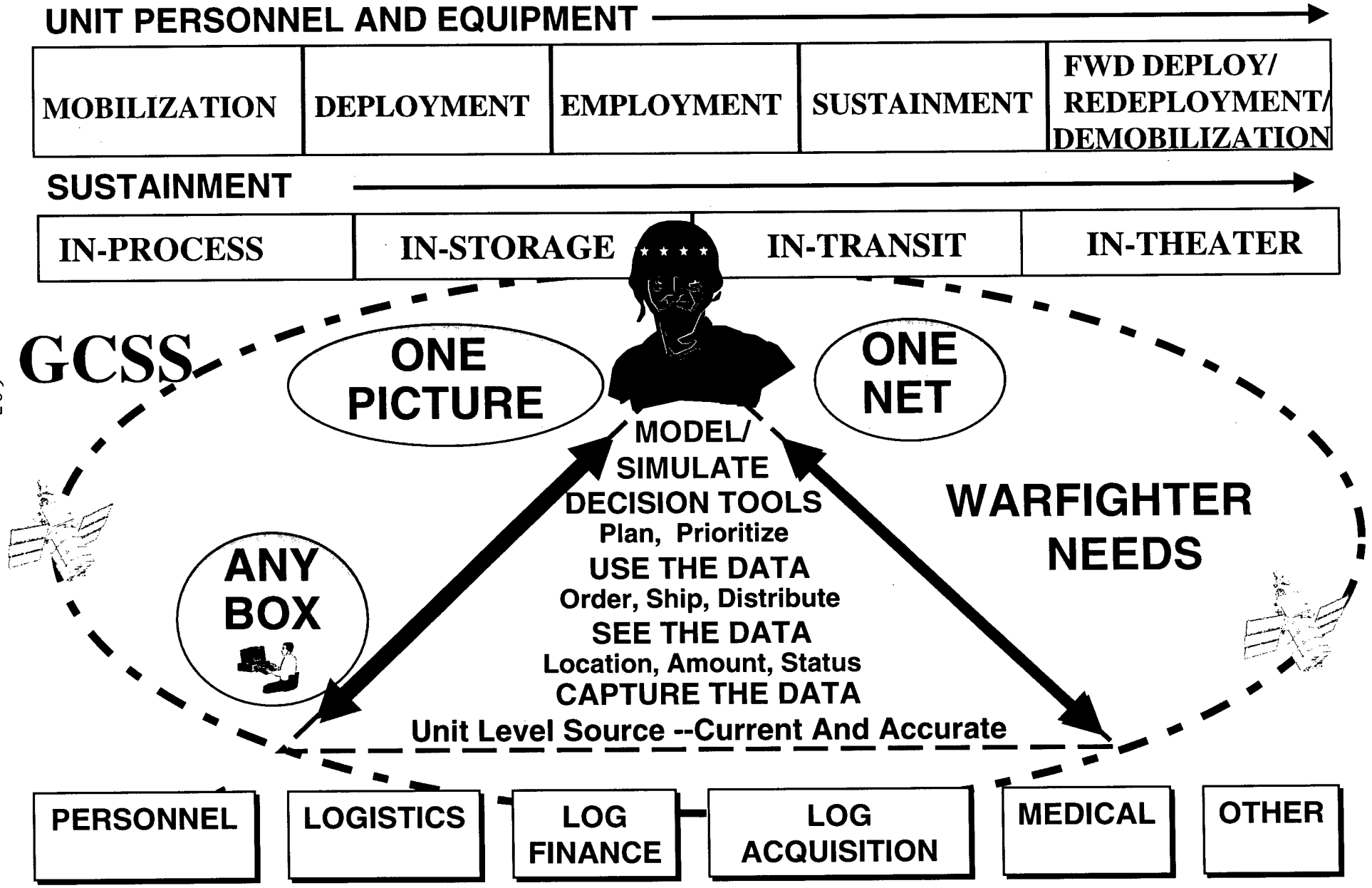

- Central R&D Organization of the Department of Defense
  - —Maintain Technology Superiority
- Pursue Imaginative & Innovative R&D Projects
- Direct R&D Projects
  - —Basic Research
  - —Applied Development
  - —Feasibility Demonstration for Improved Cost & Performance of Systems
- Cause Fundamental Change in Technology, Industrial Capability & Military Capability

# Transportation and The Information Infrastructure

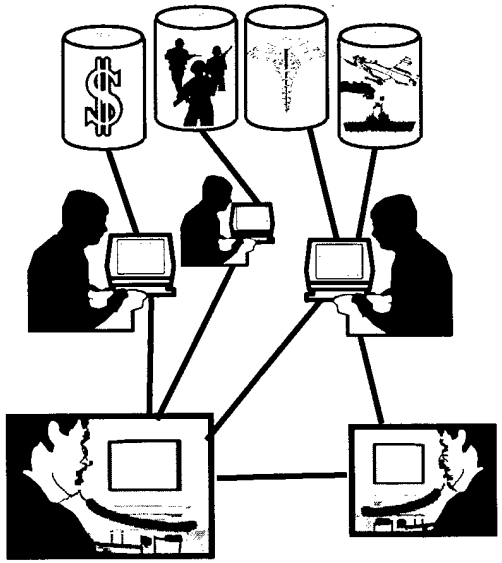

- The Great Reversal*
  - Communicating Information Relied on Transportation
  - Transportation Relies on Communicating Information
- Transportation System Security
  - Highly Visible Terrorist Targets
  - Increasingly Vulnerable to Cyber Attack
    - Not Physical
    - Remotely and Anonymously Affected
    - Cumulative Effect Not Easily Detected
    - Trend Towards Open Systems/Web Architecture Permits:
      - Wide Interchange Among Systems
      - Increasing Reliance on Other Systems and Data Leads to Potential for Widespread Failure
      - Introduces Greater Variety and Number of Penetration Points

* The Great Reversal: Information and Transportation Infrastructure in the Intermodal Vision, Rainer Alt, Paul W. Forster, and John Leslie King, Transportation Research Board National Conference on Developing a Research Framework for Intermodal Transportation, 1996

# Global Combat Support System



# Global Combat Support System



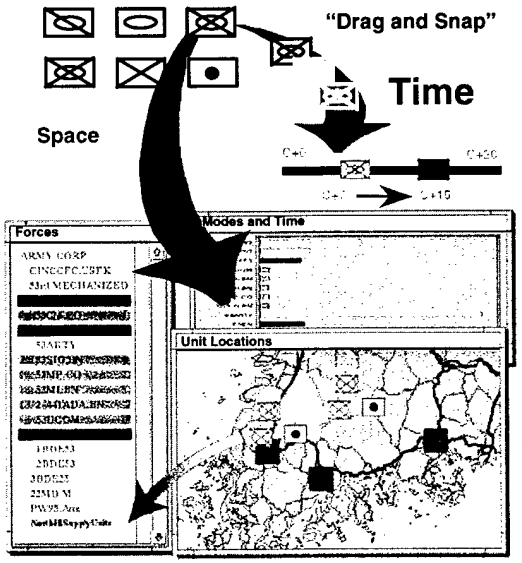
## TODAY
- Many Nets
- Many Boxes
- Selected Users
- Many Pictures

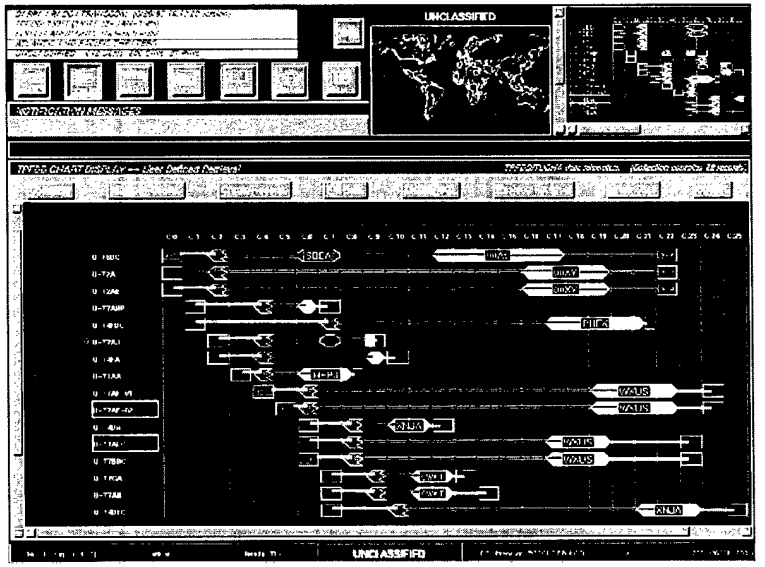

## TOMORROW
- <u>One</u> Net
- <u>Any</u> Box
- <u>Any</u> User
- Many Pictures


## FUTURE
- One Net
- Any Box
- Any User
- <u>One</u> Picture

# Advanced Logistics Program

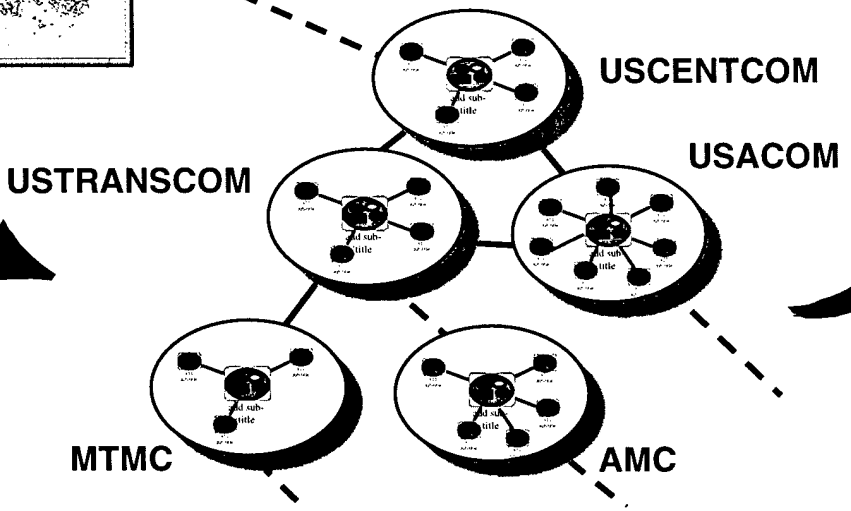
## 1. Specify Transportation Move Requirements



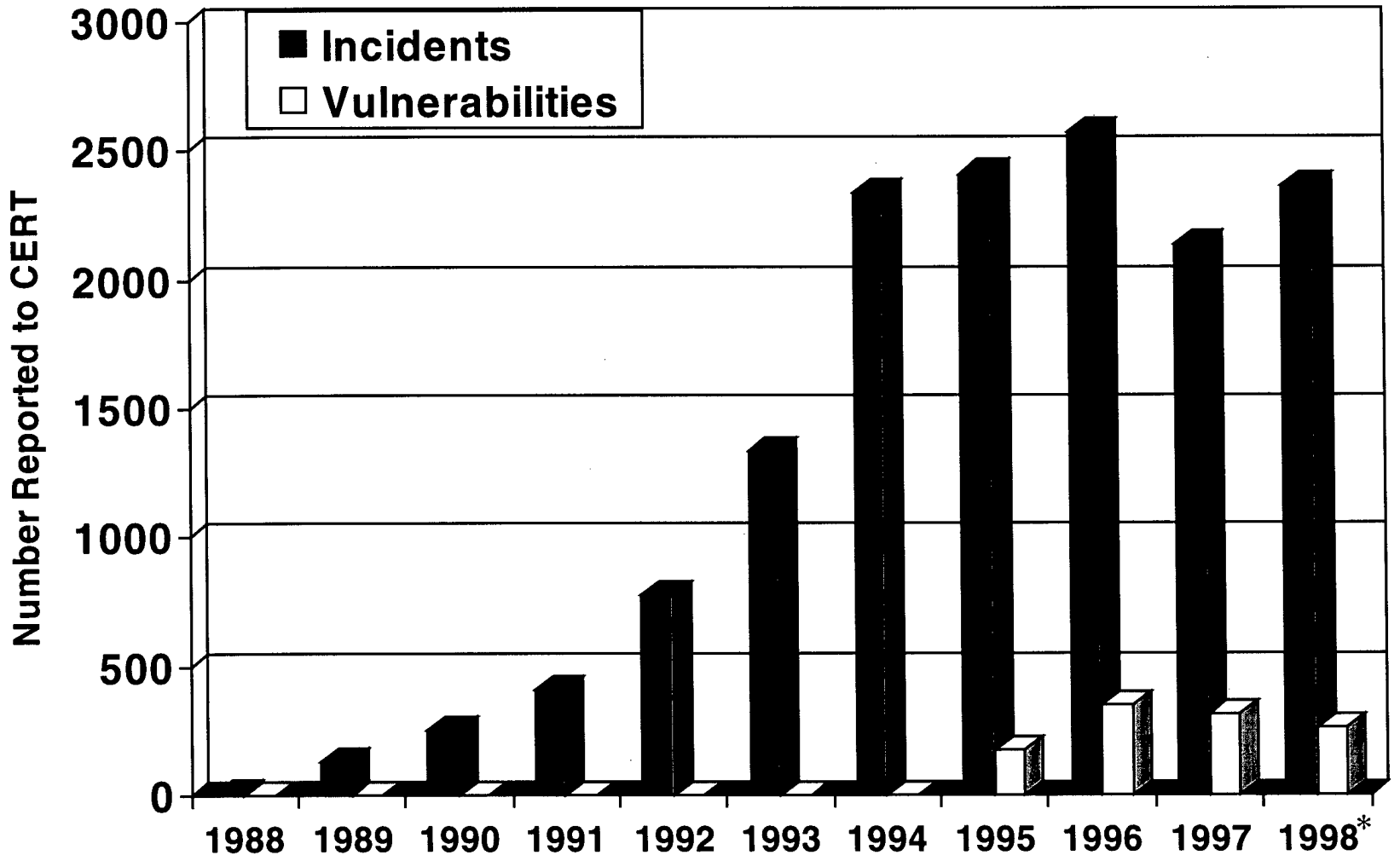




## 2. Develop Transportation Execution Plan

## 3. Create Dynamic Transportation Schedule



# Trends in Attacks on Computer Systems

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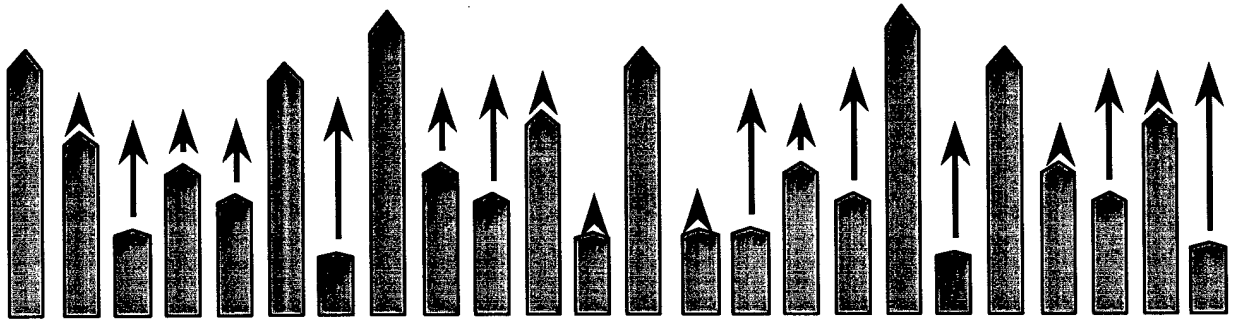
* Projected from 1st Quarter

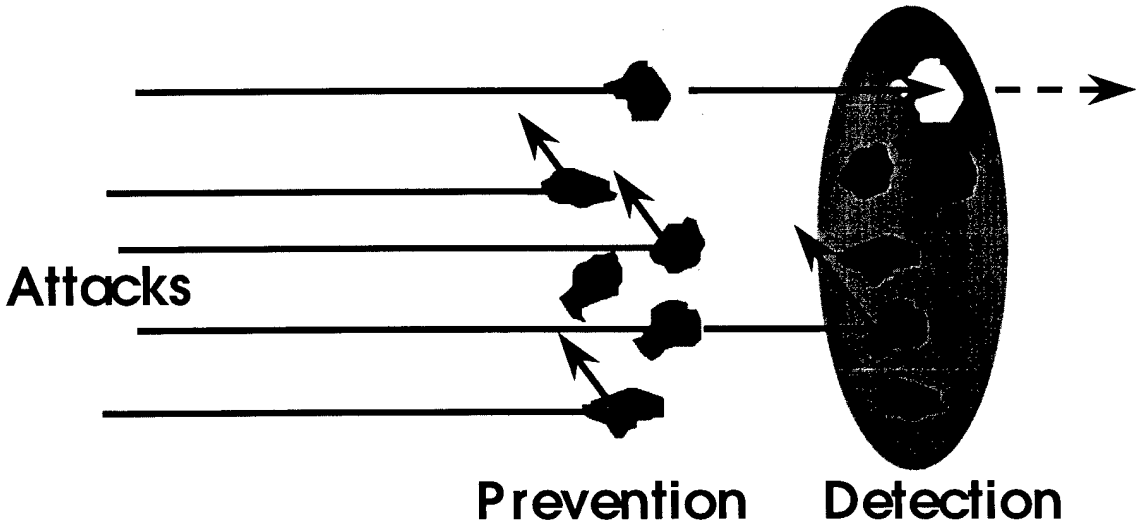
Source: CERT Coordination Center: http://www.cert.org/stats/cert_stats.html

# Information Assurance Approach


- Seek a Risk-Balanced Strategy



- Prevent What You Can, Detect Residue




- Risk reduction is the name of the game
- Need tools and techniques to map vulnerability landscape
- Need model of adversary behavior
- Take game theory view - Min-max chess problem

Approach Supports Increased R&D Investment Strategy of PCCIP Implementation Strategy Objective 7: "Usable Tools to Fill Gaps in Technology"

# Summary


- Transportation Efficiency Improvements Increasingly Dependent Upon Information Technology
  - Open Access to Data Bases and Distributed Information Processing Technologies
  - Networks (Internet, etc.)
- Potential Information Systems Solutions
  - Web Based and Other Distributed System Technologies
  - Next Generation Distributed Agent Based Architectures
- Therefore, Transportation Infrastructure Risks Need to Include Information Infrastructure Security Risks
- Information Assurance Strategies Urgently Needed
  - Risk-Balanced
  - Combined Prevention and Detection